

REMARKS

The rejections of Claims 1 and 3 under 35 U.S.C. § 102(b) as anticipated by, and of Claims 1, 3 and 5-7 under 35 U.S.C. § 103(a) as unpatentable over, US 2002/0013405 (Sakaguchi et al), are respectfully traversed.

Claim 1 reads as follows:

A multilayer structure polymer (I) comprising
(1) an innermost layer polymer (I-A),
(2) an intermediate layer polymer (I-B) with a glass-transition temperature of 25 to 100 °C comprising a composition different from that of the innermost layer polymer (I-A), and
(3) an outermost layer polymer (I-C),

wherein **the innermost layer polymer** comprises
(I-A1) an alkyl acrylate in 50 to 99.9 wt%,
(I-A2) an alkyl methacrylate in 0 to 49.9 wt%,
(I-A3) another monomer comprising a copolymerizable double bond in 0 to 20 wt%,
(I-A4) a multifunctional monomer in 0 to 10 wt%, and
(I-A5) a graft crosslinker in 0.1 to 10 wt%;

wherein the intermediate layer polymer (I-B) comprises
(I-B1) an alkyl acrylate in 9.9 to 90 wt%,
(I-B2) an alkyl methacrylate in 9.9 to 90 wt%,
(I-B3) another monomer comprising a copolymerizable double bond in 0 to 20 wt%,
(I-B4) a multifunctional monomer in 0 to 10 wt%, and
(I-B5) a graft crosslinker 0.1 to 10 wt%; and

wherein **the outermost layer polymer** (I-C) comprises
(I-C1) an alkyl methacrylate in 80 to 100 wt%,
(I-C2) an alkyl acrylate in 0 to 20 wt%, and
(I-C3) another monomer comprising a copolymerizable double bond in 0 to 20 wt%.

(Emphasis added).

Sakaguchi et al discloses a resin composition for aqueous paint. The Examiner relies on Example 6 therein, which the Examiner finds meets the terms of present Claims 1 and 3 and renders obvious the subject matter of Claims 5-7.

In reply, neither Example 6 of Sakaguchi et al, nor any other disclosure therein, anticipates or otherwise renders unpatentable the presently-claimed invention. In Example 6, the innermost layer polymer comprises methylmethacrylate (MMA) in an amount of about 72 wt% ($123/(123+45+2)$), and the outermost layer polymer comprises MMA in an amount of about 28 wt% ($45/(45+98+2+15)$), as shown in Table 1 therein. Neither amount of MMA falls within the corresponding range of the present claims. Nor does the innermost layer polymer of Sakaguchi et al contain units derived from a graft crosslinker.

Nor does Sakaguchi et al recognize any of the benefits obtained by the presently-claimed multilayer structure, such as molding whitening resistance, surface hardness, heat resistance and transparency or matting performance.

For all the above reasons, it is respectfully requested that the rejections be withdrawn.

The rejection of Claims 20-22 under 35 U.S.C. § 102(b) as anticipated by US 2002/0136853 (Koyama et al), is respectfully traversed.

Claim 20 reads as follows:

A monolayered acrylic resin film material (A) exhibiting a difference of 30 % or less between haze values as determined in accordance with the testing method of JIS K7136 (haze measurement method) after and before a tensile test where a test piece with a width of 20 mm is pulled under the conditions of an initial inter-chuck distance of 25 mm, a rate of 50mm/min and a temperature of 23 °C until an end-point inter-chuck distance becomes 33 mm as well as having a pencil hardness of 2B or higher as determined in accordance with JIS K5400.

In response to Applicants' argument in the previous response that Koyama et al requires the presence of two layers in their acrylic resin laminate film, i.e., a soft layer comprising rubber particles having a flexural modulus of about 1,300 MPa or less, and a hard layer having a flexural modulus of about 1,800 MPa or more, on at least one side of the soft layer, the Examiner finds that Koyama et al discloses forming plate shaped test pieces of a

soft layer and of a hard layer. In effect, the Examiner finds that any of these individual plate shaped test pieces meets the terms of the rejected claims absent a showing that they do not.

In reply, the newly-submitted Abe Declaration, when considered together with data in the specification herein and in Koyama et al, demonstrates that none of the hard and soft layers individually in Koyama et al, i.e., in Examples 1-4 and Comparative Examples 1-4, meet the terms of the rejected claims, as now discussed.

Hard layer disclosed in Comparative Example 2:

This hard layer does not satisfy the requirements of Claim 20 because this hard layer has a pencil hardness of 3B (TABLE 1-(2)). (It is well-known that the higher the “B” number, the softer the material.)

Hard layer disclosed in Examples 2-4 and Comparative Examples 3 and 4:

This hard layer comprises so-called acrylic resin A, i.e., MMA copolymerized with 20% by weight of BA ([0037]-[0038], [0047]-[0049] and [0052]-[0053]).

As described in Comparative Test 1 of the Abe Declaration, the acrylic resin film material (A-1) (MMA/n-BA = 77/23 (by weight)) has fractured during the tensile test. Since the composition of the acrylic resin film material (A-1) is substantially similar to that of this hard layer, this hard layer would also have fractured during the tensile test if the tensile test was conducted.

Therefore, this hard layer does not satisfy the requirements of Claim 20.

Hard layer disclosed in Example 1 and Comparative Example 1 and soft layer disclosed in Comparative Example 1:

This hard layer comprises 80 parts by weight of acrylic resin A and 20 parts by weight of triple-layered acrylic rubber particle B ([0045]). This soft layer comprises 70 parts by weight of acrylic resin A and 30 parts by weight of triple-layered acrylic rubber particle B ([0050]).

As shown in Comparative Example 3 of the present specification, the acrylic resin film material, which comprises 84 parts of the thermoplastic polymer (II-1) and 16 parts of the multilayer structure polymer (I-5), has haze values before and after the tensile test of 2.2% and 98.7%, respectively, and has a difference therebetween of 96.5% (Tables 3 and 4 of the present specification).

As described in Comparative Test 2 of the Abe Declaration, the acrylic resin film material (A-2), which comprises 60 parts of the thermoplastic polymer (II-1) and 40 parts of the multilayer structure polymer (I-5), has haze values before and after the tensile test of 2.7% and 43.9%, respectively, and has a difference therebetween of 41.2%.

Since the compositions of both acrylic resin film materials are substantially similar to those of these hard and soft layers, respectively, as shown in the following tables, these hard and soft layers, respectively, must have a difference of haze values before and after the tensile test of higher than 40%.

Therefore, these hard and soft layers do not satisfy the requirements of Claim 20.

| | | Rubber particle B | | Multilayer polymer (I-5) | |
|--------------------|------|-------------------|-----------|--------------------------|-----------|
| | | parts | Tg by FOX | parts | Tg by FOX |
| particle size | | 0.24 μ m | | 0.28 μ m | |
| innermost layer | MMA | 37.5 | 105°C | 13.75 | 24°C |
| | n-BA | - | | 9.375 | |
| | ST | - | | 1.875 | |
| intermediate layer | n-BA | 38.5 | -36°C | 31.25 | -38°C |
| | ST | 9 | | 6.25 | |
| outermost layer | MMA | 14.4 | 97°C | 35.625 | 99°C |
| | MA | - | | 1.875 | |
| | EA | 0.6 | | - | |
| TOTAL | MMA | 51.9 | 21°C | 49.375 | 15°C |
| | MA | - | | 1.875 | |
| | EA | 0.6 | | - | |
| | n-BA | 38.5 | | 40.625 | |
| | ST | 9 | | 8.125 | |

| | Koyama et. al. | | Spec. | Declaration |
|--|----------------|------------|-------------|--------------|
| | Hard Layer | Soft Layer | Comp. Ex. 3 | Comp. Test 2 |
| Acrylic resin A (MMA/BA=80/20) | 80 | 70 | | |
| Thermoplastic polymer (II-1) (MMA/MA=99/1) | | | 84 | 60 |
| Rubber particle B | 20 | 30 | | |
| Multilayer polymer (I-5) | | | 16 | 40 |
| Haze before tensile test (%) | | | 2.2 | 2.7 |
| Haze after tensile test (%) | | | 98.7 | 43.9 |
| difference (%) | | | 96.5 | 41.2 |

Soft layers in Examples 1-4 and Comparative Examples 2-4:

These soft layers have a flexural modulus of 1550 MPa or lower (TABLE 1-1).

Koyama et al also disclose a layer which has a flexural modulus of 1650 MPa and has a pencil hardness of 3B (Comparative Example 2, TABLES 1-1 and 1-(2)). As described in Comparative Test 3 of the Abe Declaration, the acrylic resin film material (A-3) has a

flexural modulus of 1370 MPa, while the acrylic resin film material (A-3) has a pencil hardness of 4B (Comparative Example 1 in Table 4 of the present specification). As described in Comparative Test 4 of the Abe Declaration, the acrylic resin film material (A-4) has a flexural modulus of 1500 MPa and has a pencil hardness of 4B. The results show that acrylic films having a flexural modulus of 1650 MPa or lower such as these soft layers must have a pencil hardness of 3B or lower.

Therefore, these soft layers do not satisfy the requirements of Claim 20.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

Applicants respectfully submit that all of the presently-active claims in this application are now in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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